

December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 36

of viewer sensitivity. In addition, the LNG port and pipeline construction sites would “alter the character of the viewshed by the introduction of anomalous structures or elements.” Here, addition of the lighted construction sites within the darkened ocean viewshed and visible from Leo Carrillo State Beach and nearby areas represents an alteration in the character of the viewshed and the introduction of a clearly anomalous element. Moreover, a lighted construction site within the darkened seascape would “substantially damage scenic resources” within the viewshed of Highway 1, a State scenic highway. Finally, the lighted construction site would “create a new source of substantial light or glare”, and this site would “adversely affect nighttime views from shoreline areas and adjacent water areas” as the site would be very apparent and anomalous at night with the “new” light source.

Each of these circumstances indicates that night lighting during construction will have a significant impact on views. Proposed mitigation, however, would not ensure that this impact is minimized or avoided. Instead, proposed mitigation measure MM Bio-Mar-13a merely provides that the applicant “shall submit a plan that shows that the Project will apply restrictions on lighting.” MM Bio-Mar-13a specifies vague criteria for limitations on lighting during construction, but provides no assurance that impacts to night views will be avoided or minimized during construction. These criteria appear to be intended to reduce local biological impacts of night lighting; there is no analysis of their effectiveness in reducing long distance nighttime view impacts, nor does any evidence indicate that they will be effective in reducing such impacts to a less than significant level. This mitigation measure thus represents improper deferral of mitigation without sufficient performance standards or criteria inconsistent with the requirements of NEPA and CEQA. The DEIS/R must propose a specific mitigation measure capable of avoiding or minimizing the impacts that will result from night lighting during construction.

### Impact AES-2

The DEIS/R concludes (p. 4.4-31) that the proposed action will not have a significant aesthetic impact due to the alteration of ocean views from onshore and Channel Islands viewpoints. This conclusion is based on an overly narrow set of vantage points. The DEIS/R evaluates views from only two vantage points, both of which are at near sea-level (although a slightly elevated vantage point near Leo Carrillo State Beach is briefly considered). The first simulated vantage point is on the mainland near Leo Carrillo State Beach, and the second is on Anacapa Island. The use of more elevated vantage points for simulation is critical because of visual “cut off” effected by the curvature of the earth. The report fails to photo simulate even one vantage point in a more elevated area. It is critical that the DEIS/R evaluate vantage points that are both closer to and at more of a right angle to the long side of the port. The report should photo-simulate more than one such vantage point in order to support its impact analysis conclusion with substantial evidence, as the areas in question cover many square miles and the dramatic ocean view from such areas is a primary attribute. The LNG port should be acutely visible from the lower portions of State Highway 23, as well as elevated areas of Point Mugu State Park and Leo Carrillo State Park, especially from elevations of approximately 225 ft. above sea level. Furthermore, views from elevations above the 225 ft. level will begin to manifest the horizontal

G437-90

During construction of the offshore pipelines, most lighting associated with the barges, tugs and other construction equipment would have an effective visibility range of about 11.5 miles or less under clear weather conditions, so the lighting would be visible for about half of the 21-mile offshore pipeline construction. This construction phase is a temporary condition and would not be expected to last more than 1.5 to 2 months.

G437-91

A viewer standing on the road above the beach (about 47 feet above sea level) versus standing on top of Mugu Peak (1,271 feet above sea level) represents a change in viewing angle from approximately 0.03° at the beach to 0.64° on top of Mugu Peak.

Appendix F contains four new photographs, three of which are new photograph simulations of the FSRU from elevated inland positions. As suggested, the photographs were taken from higher elevations at Mugu Peak, Sandstone Peak, Trifuno Lookout, and a point close to Saddle Rock. The simulations did not result in any changes in or conclusions of the analysis.

G437-92

Section 4.4.1.1 discusses the FSRU's position in relation to the coastline. The general orientation of the FSRU due to prevailing wind and water currents would be roughly parallel to the coast. This is the view used in simulations. Section 4.4.1.2 contains additional information on offshore views from the coastline.

G437-93

The mainland locations used for the simulations are the two onshore areas closest to the FSRU; therefore, this simulated view presents the worst case scenario for visual impacts under a variety of weather conditions.

G437-94

All three locations proposed for additional simulations are farther from the FSRU than the site near Leo Carrillo State Beach that was selected for simulations. See the response to Comment G437-91.

G437-95

See the response to Comment G437-91.

December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 37

planes of the port, which are not painted "dark blue" and will thus be more visible. It is thus essential that the DEIS/R evaluate views of the site from higher elevations.

While the DEIS/R recognizes that "the views from higher coastline and island points would be altered by the presence of the FSRU," it summarily dismisses the significance of the impact because "different populations would dispute the significance of the change," (p. 4.4-31) while failing to simulate any such views. The DEIS/R discloses no basis in survey data or other criteria for this opinion. This speculation does not constitute substantial evidence supporting the conclusion that the proposed action would have a less than significant impact on ocean views. Even if it was factually established that a dispute exists as to the significance of the project's visual impact, such a dispute would not render the impact insignificant.

Despite the conclusion that the FSRU would create a significant aesthetic impact, the DEIS/R acknowledges that the project would "alter the character of the viewshed by the introduction of anomalous structures or elements" when viewed from higher vantage points, thus satisfying the stated threshold of significance for aesthetic impacts. Indeed, it cannot be denied that a massive industrial structure topped by three giant green globes is an "anomalous structure or element" in the context of a pristine (and in this portion of the coast, non-industrialized) seascape. This significant impact must be acknowledged and the DEIS/R must propose feasible mitigation or avoidance measures.

Elsewhere, the DEIS/R acknowledges (p. 4.4-16) "higher points of the FSRU above the waterline would be visible from many locations in the Santa Monica National Recreation Area, including hiking trails." Following this statement, the report states that "[f]rom this bluff viewpoint, the entire FSRU would be visible" but then summarily dismisses the impact, stating that it is "not clearly defined because of the hazy atmosphere." There are clear days and there are hazy days in this area, as acknowledged in other parts of the DEIS/R. In fact, the DEIS/R shows photo simulations of a clear day as well as a hazy day from a lower elevation vantage point near Leo Carrillo State Beach. The DEIS/R, however, fails to evaluate impacts on clear day views from higher viewpoints within the Santa Monica Mountains National Recreation Area. Furthermore, the potentially significant aesthetic impacts from many closer and elevated vantage points on even a hazy day must be simulated and evaluated. Thus, the DEIS/R fails to adequately simulate either clear or hazy conditions with respect to this potential impact.

The DEIS/R further dismisses (p. 4.4-30) the elevated vantage points with the statement that "[b]ecause of the shape and color of the FSRU, it would appear as an indistinguishable object on the horizon." Assuming that the DEIS/R is referring to very elevated vantage points, this conclusion fails to account for the fact that the horizontal planes of the port (visible from very high vantage points) as well as the giant green globes and the additional structures on the deck surface are not "dark blue" and will appear very anomalous. Furthermore, the shape of the proposed port is absolutely anomalous to the surface of the ocean. If, however, the DEIS/R is referring to views from less elevated vantage points, the "shape and color of the FSRU" will be anomalous when silhouetted against the sky above the ocean. In either case, the DEIS/R must disclose and evaluate this impact.

G437-96

See the response to Comment G437-91.

G437-97

Section 4.4 contains information on the visual aspects of the Project, potential impacts, and measures to address such impacts. "...[t]he FSRU would appear similar in shape to commercial vessels that are frequently seen in the Project area..." Table 4.3-1 contains information on the numbers and representative sizes of vessels that are commonly found in the proposed Project area. See Impact AES-1 in Section 4.4.4. Appendix F includes additional simulations.

G437-98

See the response to Comment G437-91.

G437-99

See the response to Comment G437-91.

G437-96

G437-97

G437-98

G437-99

December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 38

The analysis of Impact AES-2 concludes by stating that “[d]ue to the distance of the FSRU from key observation points and the maritime character of the FSRU in the distance, this EIS/EIR concludes that the proposed port would not substantially degrade the character of the area, degrade an existing viewshed or scenic vista or alter the character of the viewshed by the introduction of anomalous structures or elements.” Here, in citing only one of the three elements of the threshold criteria, the analysis ties no reasonable facts to it. The justification in the argument begins with the “distance of the FSRU from key observation points” and cites the “maritime character.” The report does not show a basis for stating that the “distance” to the port will cause its impact to be rendered insignificant. On the contrary, the DEIS/R fails to simulate views that are most proximate to the full profile of the FSRU and at higher elevations. Moreover, the distance element is largely neutralized by the massive scale of the facility, yet this fact is not included in the analysis.

The DEIS/R also fails to provide support for its conclusion that the “maritime” character off the FSRU reduces its visual impact. The manifestation on the seascape of a massive rectangle with three huge green globes attached to it would arguably appear to be more industrial than “maritime” in character to most observers, yet this character is not considered. Most importantly, this statement is made without a sufficient basis of photo simulations or expert opinion, as discussed above.

#### Impact AES-3

The EIS/EIR proposes no mitigation measures relating to the potential for the FSRU to alter the views and experiences of recreational boaters. This impact on visual resources and aesthetics requires further analysis.

#### Impact AES-4

The DEIS/R concludes (p. 4.4-34) that the proposed action will have a less than significant impact due to long-term changes in nighttime views. This conclusion is based on implementation of proposed MM Bio-Mar-13a, which requires that the applicant shall submit a lighting restriction plan in the future. MM Bio-Mar-13a merely specifies vague criteria for reducing local illumination during project operation, but provides no assurance that long-term operational impacts to night views will be avoided or minimized. For example, the requirement that no light beams are directly visible more than 1000 m distant will not necessarily reduce the nighttime visibility of the illuminated FSRU from a distance. The DEIS/R must specifically consider the nature of the residual impact on nighttime views after this measure is implemented. Currently, the conclusion that this impact will be less than significant with mitigation is unsupported by substantial evidence. Moreover, this mitigation measure represents improper deferral of mitigation without sufficient performance standards or criteria to ensure that the impact will be avoided or minimized inconsistent, and is thus inconsistent with the requirements of NEPA and CEQA. The DEIS/R must propose a specific mitigation measure capable of avoiding or minimizing the long-term impacts that will result from night lighting during operation.

#### G437-100

The distance from the viewer to the FSRU is a significant factor in reducing the visual impact of the Project, rendering its appearance to a small, ship-like object at the horizon, with individual components of the facility not being discernible to the naked eye. The maximum (i.e., worst case scenario) visual impact that will exist under varying weather conditions has been simulated. Any change in elevation or onshore location of the observer from Oxnard to Malibu would not produce a discernibly different view.

G437-100

#### G437-101

Section 4.4 and Appendix F contain information on visual resources, impacts, and mitigation. Appendix F describes how visibility from various distances was evaluated and provides additional simulations prepared for viewpoints at elevated sites along the Malibu coastline and inland areas. Figure 2.2-1 shows the height of the structures above the loaded waterline, which is also discussed in Section 4.4.1.1. See the response to Comment G437-97.

G437-101

#### G437-102

The effects on the views of recreational boaters is a Class I impact for which there are no feasible mitigation measures.

G437-102

#### G437-103

It is unlikely that any lights onboard the FSRU would be visible from the mainland, with the exception of the rotating beacon at the highest, unobstructed point on the vessel, which flashes at least once every 20 seconds and is positioned so as to be visible all around the horizon. This light must have an effective intensity of at least 15,000 candela (fairly low light output compared to a typical high beam on an automobile at about 100,000 candela).

G437-103

All other lighting on the vessel must not interfere with the range and arc of visibility of navigational lighting and therefore would be of significantly lower luminous intensity (candela). Even a typical LED marine beacon, achieving between 1,500 and 2,800 candela, has a range of only 6 to 10 NM. Therefore, except for the rotating beacon, it is extremely unlikely that any lights on the FSRU would be visible from the mainland.

#### 4.6 AIR QUALITY

##### 4.6.1 Environmental Setting

The DEIS/R states that lower levels of non-hydrocarbon gases and contaminants in LNG will help limit potential air quality impacts, and that the air quality analysis is based on the presumption that the LNG will be of pipeline quality with very high methane content. (DEIS/R, p. 4.6-1.) Although this presumption is fundamental to the DEIS/R's air quality analysis, the DEIS/R provides no assurance beyond the applicant's word that the LNG to be imported will meet pipeline quality specifications without further treatment. To ensure that this presumption is valid, the DEIS/R must include conditions (either as mitigation measures or elements of the proposed action) specifying that imported LNG will meet the standards for acceptable levels of non-hydrocarbon gases and contaminants. Moreover, the DEIS/R should establish a monitoring and testing regime to ensure that the imported LNG meets these standards.

##### 4.6.2 Regulatory Setting

The DEIS/R's discussion of the regulatory regime applicable to vessel emissions associated with the proposed action is confusing and is inconsistent with existing regulatory interpretations. According to the Deepwater Port Act, a deepwater port such as the proposed action is considered a new source under the Clean Air Act (33 U.S.C. § 1502(9)(D)). The EIS/R indicates (p. 4.6-7) that under the Deepwater Port Act, the regulations of the corresponding onshore area "also apply." The basis in the Deepwater Port Act for this statement is not apparent. In any case, according to Ventura County APCD's New Source Review rule, marine vessels are treated as stationary sources for the purposes of offset requirements in some circumstances. These circumstances include, for example, emissions from LNG tankers and other vessels docked at the FSRU. *The DEIS/R fails to include any LNG carrier emissions in the emissions subject to Ventura County APCD's offset requirement, and thus significantly understates emissions that must be offset pursuant to this rule.* The DEIS/R should reflect this interpretation, and the analysis should consider necessary offsets through Ventura County APCD and other appropriate mitigation measures for such emissions. In addition, the DEIS/R should clarify the regulatory scheme applicable to each source of emissions associated with the proposed action.

The DEIS/R contains no discussion of the Ventura County APCD air quality CEQA thresholds of significance. We understand that these thresholds are 25 lbs/day for ROC and 25 lbs/day for NO<sub>x</sub>. The DEIS/R must evaluate whether the proposed action will exceed these thresholds, and if so, propose mitigation measure for this significant environmental impact.

Similarly, although the DEIS/R discloses that the proposed action will result in emissions within the jurisdiction of the South Coast Air Quality Management District ("SCAQMD") due to construction-related activities in Los Angeles County, it does not discuss SCAQMD's applicable CEQA thresholds of significance, nor does it evaluate how SCAQMD's rules will apply to the

G437-104

As indicated in Section 4.6.2, the natural gas imported by the proposed Project would need to meet the requirements of Rule 30 and General Order 58-A of the California Public Utilities Commission (CPUC) or it could not be accepted for distribution by SoCalGas. Rule 30, as described, has specific requirements, including a heating value range.

G437-104

Section 4.6.2 contains additional information on the regulatory setting affecting air quality and a revised discussion of the heating value of imported natural gas that incorporates the recent rulemaking by the CPUC. An analysis of the impacts of the CPUC rulemaking is beyond the scope of this document as required by NEPA and the CEQA.

G437-105

The USEPA has made a preliminary determination, on which the lead agencies must rely, that the FSRU should be permitted in the same manner as sources on the Channel Islands that are part of Ventura County. Section 4.6.2 contains an updated discussion of relevant regulatory requirements.

G437-106

Section 4.6.3 contains revised text on this topic.

G437-107

Section 4.6.2 provides a description of the primary South Coast Air Quality Management District (SCAQMD) rules applicable to the Project. Section 4.6.3 contains revised information on significance criteria specific to SCAQMD.

G437-105

G437-106

G437-107

December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 40

proposed action. The DEIS/R must evaluate and mitigate the proposed action's air quality impacts in all geographical areas.

#### 4.6.4 Emissions Analysis

The DEIS/R contains almost no documentation of the assumptions used in determining emissions (except for a few footnotes on the tables). The DEIS/R must clearly state the emission factors, operating scenarios, impact analysis inputs and results, modeling results, cumulative impact emissions sources considered, and quantification of mitigation inputs and results for all anticipated emissions in order to permit the public and other agencies to understand the assumptions that form the basis of the impact analysis.

Most of the analyses appears to be based on best-case construction and operating scenarios, with little or no consideration of the impacts associated with delays due to weather, equipment failure or operator errors. The environmental impacts from infrequent circumstances and upset conditions (on the FSRU, LNG carrier, pipeline, onshore valve stations and downstream gas transportation system) must be addressed in the DEIS/R. The impacts from substantially extended construction periods, long delays in docking, unloading, and delays in regasification must be addressed. For example, the additional air quality impacts from the "30-hour cool-down period" should be addressed. Additionally, the DEIS/R should evaluate the environmental consequences that may occur if the LNG is found to be contaminated before regasification, including an extended operating timeline, altered behavior of gas upon regasification, and additional emissions of pollutants.

There are discrepancies between the air emissions sources described in the text of the DEIS/R and those described in Table 4.6-3. For example, the text indicates that there will be three natural gas-fueled Wärtsilä generators and one dual fuel backup generator, while Table 4.6-3 indicates that all generators will be dual fuel capable. These inconsistencies must be resolved, and the actual air quality consequences fully disclosed.

The DEIS/R must address the impacts associated with the extended use of the Wärtsilä generator running on diesel fuel. Currently, the DEIS/R appears to assume (p. 4.6-7) that the generator will never operate more than 100 hours per year on diesel fuel. The DEIS/R should consider contingencies that may require the generator(s) to run for longer periods on diesel fuel. Additionally, the impacts of increased vessel use to replenish the diesel fuel from extended use of the generator should be addressed.

The anticipated mass emissions from the FSRU Wärtsilä dual fuel generators (Table 4.6-3) do not appear to be justified on a daily, quarterly, and annual emission basis. Instead, it appears that the emissions analysis is based on an aggregate and engine-operating-hour basis. This approach requires further explanation and evaluation. Also, no emission factor information is provided (for emission inventory, recordkeeping, and reporting functions) other than references in Appendix D to the SCR and catalytic oxidation systems. The omission of this information from

G437-108

Section 4.6.1.3 contains revised information on emissions from Project construction and operations. Appendices G1 and G2 include the assumptions and emission factors used to calculate emissions.

G437-109

The emissions analyses are consistent with historic operation and construction schedules of comparable projects that incorporate typical deviations from normal conditions.

G437-110

See the response to Comment G437-109.

G437-111

See the response to Comment G437-104.

G437-112

See the response to Comment G437-108.

G437-113

The FSRU's main and backup generators have the capability to operate with natural gas or diesel. The generators would operate on 100 percent diesel only during emergencies, monthly maintenance testing, training drills, and initial commissioning of the FSRU. Section 4.6.1.3 contains a revised discussion of this topic.

G437-114

See the response to Comment G437-108.

G437-115

See the response to Comment G437-108.

G437-116

See the response to Comment G437-108.

G437-108

G437-109

G437-110

G437-111

G437-112

G437-113

G437-114

G437-115

G437-116



December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 41

the DEIS/R frustrates the public's ability to evaluate mass emissions from the various generators associated with the proposed action.

In addition, based on the emission factors provided by the manufacturer of the Wärtsilä engines, it appears that the emission calculations in the DEIS/R are incorrect and significantly underestimate the actual emissions. In particular, the Wärtsilä 50 DF engine series data sheet (available at <http://www.Wartsila.com>) specifies emission factors for both 100% and 75% loads. The DEIS/R does not clearly state which emission factors were used in the analysis, nor does it reveal how gas compositions were accounted for in the emissions calculations. In fact, when the emission factors provided by the manufacturer are used with the correct emission calculation formula, it appears that the DEIS/R significantly understates emissions. The DEIS/R should explain the basis for its emissions conclusions, including relevant calculations.

Expected water production from the Submerged Combustion Vaporizers indicates that there may be greater engine firing, and thus a greater potential for emissions than is stated in Table 4.6-3. The water production rate given on p. 2-16:11-19 is 199,680 gallons per day generated with an average of 5 of 8 Submerged Combustion Vaporizers operating simultaneously for an aggregate total of 40,000 hours per year. The equivalent firing to produce this amount of combustion-generated water appears to be greater than the 198.75 MMBTU/hr capacity described in Table 4.6-3. The DEIS/R must reconcile this discrepancy.

The NO<sub>x</sub> emissions described for the Submerged Combustion Vaporizers in Table 4.6-3 appear to be far too low to be achieved without Selected Catalytic Reduction ("SCR") technology. The DEIS/R must disclose the basis for these emissions conclusions, including relevant calculations.

The DEIS/R states (p. 4.6-14) that the LNG will be "virtually sulfur-free." According to BHP's own documentation, sulfur contents are stated as less than 5 mg/Nm<sup>3</sup> H<sub>2</sub>S and less than 30 mg/Nm<sup>3</sup> total sulfur ("Typical Quality Specification for delivery at Withnell Bay, Western Australia" (June 2004)). The DEIS/R, however, does not state how much less sulfur content the proposed action's LNG is expected to contain in comparison to these specifications. Absent any other information, the DEIS/R's "potential to emit" calculations must utilize these product specifications and fully disclose SO<sub>2</sub> emissions for all part of the proposed action accordingly.

The Table 4.6-3 SO<sub>2</sub> emissions for both the Wärtsilä generators and the Submerged Combustion Vaporizers appear to be considerably understated. The DEIS/R must disclose the basis for these emissions conclusions, including relevant calculations. In light of the proposed action's actual SO<sub>2</sub> emissions, the DEIS/R must provide a more detailed discussion of the applicable regulatory thresholds for this pollutant.

The DEIS/R states (p. 4.6-14) that "no significant methane losses are anticipated during offloading of the LNG." The DEIS/R must provide some basis for this conclusion. Has this been the experience at other LNG terminals? In addition, the DEIS/R fails to disclose the methane losses that can be expected during tankering and pipeline transportation. Actual methane emissions during all phases of the proposed action must be disclosed and evaluated.

G437-117

See the response to Comment G437-108.

G437-118

See the response to Comment G437-108.

G437-119

See the response to Comment G437-108.

G437-117 G437-120

See the response to Comment G437-108.

G437-121

See the response to Comment G437-108.

G437-122

Section 4.6.1.4 contains revised text on this topic.

G437-118

G437-119

G437-120

G437-121

G437-122

December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 42

The DEIS/R states (p. 4.6-16) that all LNG carriers supplying the FSRU will "be fueled solely with LNG." This statement requires additional explanation and evaluation. Does this capability currently exist, or is it expected to be in place by the time the proposed action begins operation? Based on available information, it appears highly unlikely that the current generation of LNG carriers can be operated at 100% LNG-fueled mode. If carriers using other fuels will transport LNG for the proposed action, the DEIS/R must evaluate the environmental effects of emissions from these carriers. If all carriers will be 100% LNG-fueled, mitigation measure AMM AIR-4a should expressly incorporate this requirement. In addition, the applicant should be required to demonstrate its compliance with this condition through recordkeeping and reporting.

G437-123

The DEIS/R fails to evaluate the possibility that additional compressors will be needed to transport natural gas generated by the proposed action using the existing on-shore pipeline infrastructure. Construction and operation of these compressors will have a significant effect on air quality.

G437-124

The DEIS/R states (p. 4.6-21) that the proposed action will have a less than significant effect due to temporary emissions from a pipeline accident. In general, however, the DEIS/R fails to evaluate the air quality impacts from upsets and accidents (including spills, leaks, fires, collisions, valve and pipeline failures) during all phases of construction and operation, including both onshore and offshore operations. The potential frequency of these events should be identified in the document based on a review of data from existing facilities (LNG, LPG, CNG, marine ports, etc.), and the magnitude of reasonable impacts due to upsets and accidents must be addressed.

G437-125

The DEIS/R fails to evaluate the air quality impacts associated with decommissioning of the Cabrillo Port facility. These impacts should be quantified and evaluated.

G437-126

#### Mitigation Measures

In general, the air quality mitigation measures are stated in such a vague manner that it is impossible to determine whether identified significant impacts will in fact be reduced to a less than significant level. In order for the document to be of use to agency decision makers, the mitigation measures need to be restated in a concise manner, and the extent of mitigation with respect to each significant impact needs to be quantified.

G437-127

The DEIS/R acknowledges (p. 4. 6-14) that the proposed action will result in a significant air quality impact (AIR-2) because "[r]egulated pollutants (including criteria and hazardous) could be emitted above regulatory standards for a long-term during normal operations of the FSRU." Proposed mitigation measure AMM AIR-2a, however, is inadequate because it does not include the requirement of SCR to control NO<sub>x</sub> emitted by the Submerged Combustion Vaporizers. SCR is a practical, achievable technology presently in use at the Everett, Massachusetts LNG receiving terminal (and proposed here for the primary internal combustion engines). According to the DEIS/R (Table 4.6-3) the eight Submerged Combustion Vaporizers will be responsible for

G437-128

G437-123

The Project has been modified since issuance of the October 2004 Draft EIS/EIR. See Section 1.4.2 for a summary of Project changes. Tugs and crew vessels would have diesel engines equipped with air pollution control technology that would result in emissions comparable to emissions from natural gas-fueled engines.

G437-124

No additional compressors are proposed for the Project; therefore, construction and operation of compressors need not be evaluated.

G437-125

Impact AIR-3 in Section 4.6.4 contains revised information on impacts from an LNG spill or pipeline rupture.

G437-126

The projected FSRU in-service life is a maximum of 40 years. Environmental conditions and specific impacts 40 years from now are not reasonably foreseeable. As noted in Section 2.8, supplemental NEPA/CEQA documentation, which would take into consideration the environmental conditions at the time, would be required prior to the decommissioning of the FSRU. Also as noted in Section 2.8, as part of the license approval, the DWPA requires each applicant to furnish a bond or demonstrate other proof that if the project is abandoned then sufficient monies would be available for either completion or demolition of the project.

G437-127

The Project has been modified since issuance of the October 2004 Draft EIS/EIR. Section 4.6.4 contains revised text on this topic.

G437-128

An emission control technology analysis prepared by the Applicant concluded that selective catalytic reduction is not technically feasible for submerged combustion vaporizers (SCVs) in a floating marine environment. The emission control technology analysis was submitted to USEPA Region 9 as part of the Applicant's Minor New Source Review Construction Permit Application.



December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 43

nearly half of the proposed action's NO<sub>x</sub> and CO emissions. Stationary source emissions must be reduced to the maximum extent feasible (see Ventura County APCD Rule 26 and Deepwater Port Act 33 U.S.C. § 1503(c)(5) – the applicant must demonstrate the use of best available technology in construction and operation to avoid or minimize environmental harm). SCR is a feasible technology and must be included as mitigation for the Submerged Combustion Vaporizers.

In addition to emissions controls, mitigation for impact AIR-2 depends on obtaining offsets through Ventura County APCD's New Source Review (NSR) rule (MM AIR-2b). Ventura County APCD has indicated, however, that "[t]he limited availability of emissions reduction credits (ERCs) for use at a new major source in Ventura County may make acquisition of the ERCs difficult for BHP Billiton." (Ventura County APCD September 14, 2004 "Status Report on Air Permits for Proposed Liquefied Natural Gas Ports," emphasis added). *The DEIS/R includes no discussion of the feasibility of obtaining the offsets required by the Ventura County NSR rule.* Based on Ventura County APCD's comment, there is substantial evidence indicating that the required offsets may not be available. There is thus no basis for the DEIS/R's conclusion that stationary source emissions will be reduced to a less than significant level. Moreover, Ventura County APCD observed that, even if offsets were available, "use of this amount of ERCs would result in a significant reduction in the amount of ERCs available to offset other stationary source growth in Ventura County in future years." (September 14, 2004 Status Report, emphasis added). The DEIS/R fails to consider the environmental consequences of the proposed action absorbing a large part of the credits available for other stationary sources. In particular, it is probable that other stationary sources would be onshore facilities paying taxes within Ventura County and supporting county environmental services and programs. Accordingly, an offshore activity that absorbs the bulk of the available credits may have an adverse environmental impact relative to onshore activities.

In addition, the DEIS/R refers to offsets "negotiated" with Ventura County APCD (MM AIR-2b). It is not clear how the Ventura County APCD NSR rule requiring offsets at a ratio of 1.3 to 1 for NO<sub>x</sub> and CO emissions is negotiable. The DEIS/R must clearly quantify the offsets that will be required and how these offsets will be obtained.

The DEIS/R concludes that a conformity analysis will mitigate several of the proposed action's air quality impacts (AIR-1, AIR-5, and AIR-7). The conformity analysis has not yet been performed, nor does the DEIS/R include any criteria or performance standards for mitigating air quality impacts through the conformity analysis. The EIS/R provides no basis for concluding that the proposed action will be found to be in conformity with the State Implementation Plan (SIP). Moreover, the DEIS/R provides no basis for concluding that feasible measures (offsets, mitigation, etc.) are available to achieve conformity with the SIP. There is thus no basis for the DEIS/R's conclusion that impacts AIR-1, AIR-5, and AIR-7 will be mitigated to less than significant levels. By relying on a future conformity analysis, the DEIS/R improperly defers both the analysis and mitigation of the proposed action's air quality impacts. The EIS/R must provide, at a minimum, evidence indicating that there is a reasonable prospect of demonstrating conformity, and the criteria and/or performance standards required to achieve conformity.

G437-128  
cont'd

G437-129

G437-130

G437-131

G437-132

G437-133

G437-134

G437-135

G437-136

G437-129

See the response to Comment G437-105.

G437-130

See the response to Comment G437-105.

G437-131

See the response to Comment G437-105.

G437-132

See the response to Comment G437-105.

G437-133

The Draft General Conformity Determination was issued in March 2006 with a 30-day public comment period. However, based on equipment changes proposed by the Applicant, MARAD, and the USCG has determined that the General Conformity Rule does not apply. Appendix G4 contains additional information on this topic.

G437-134

See the response to Comment G437-133.

G437-135

The Project has been modified since issuance of the October 2004 Draft EIS/EIR. Section 4.6.4 contains revised text on this topic.

G437-136

See the response to Comment G437-133.



December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 44

The DEIS/R states (p. 4.6-16) that that emissions calculations for supply and support vessels “are based on use of low-sulfur diesel (California diesel) or natural gas, when feasible ...” It is not clear, however, what percentage of supply and support vessels will actually be fueled by low-sulfur diesel and natural gas. The DEIS/R must either condition the fuel types for these vessels through an additional mitigation measure or evaluate the emissions based on a foreseeable mix of actual fuel types.

Although the DEIS/R discloses that the proposed action will result in a significant air quality impact due to vessel emissions, it is not clear what portion of these emissions will be regulated as “stationary sources” subject to offset and what portion will be regulated as mobile sources. Ultimately, however, it is irrelevant for NEPA/CEQA purposes how these emissions are regulated – if they will result in a significant environmental impact, they must be mitigated or avoided to the maximum extent feasible. If a significant part of the 141 tons per year of NO<sub>x</sub> and 21 tons of ROC estimated to result from vessel emissions in federal waters (Table 4.6-3) is subject to regulation as a mobile source (and thus not subject to Ventura County APCD offset requirements according to the DEIS/R’s interpretation), then Mitigation Measure AMM AIR-4a is wholly inadequate for reducing this impact to a less than significant level. In fact, the emissions estimates in Table 4.6-3 appear to be based on emissions assumptions more optimistic than Mitigation Measure AMM AIR-4a (Table 4.6-3 assumes natural gas-fueled LNG carriers and low-sulfur diesel-fueled support and supply vessels, while Mitigation Measure AMM AIR-4a merely provides that new supply and support vessels with USEPA-compliant engines would be used). Thus, Mitigation Measure AMM AIR-4a does not reduce the proposed action’s emissions to levels below those already anticipated in Table 4.6-3. The EIS/R must include mitigation measures that can fully mitigate the emissions associated with mobile sources.

The DEIS/R should also consider additional feasible mitigation measures including the use of electric power from shore to power all offshore components and degasification and the use of SCR on all combustion sources (stationary and mobile).

#### **Cumulative Air Quality Impacts**

The DEIS/R fails to address the cumulative impacts of the proposed action with other existing and proposed projects in the area. Among the cumulative sources of air pollutant emissions that need to be addressed are projected increases in shipping traffic, offshore oil and gas development and onshore traffic. In particular, the USDOT proposal to expand coastal shipping to relieve highway traffic, and the anticipated increases in coastal shipping due to increased imports and export traffic must be evaluated as adding to the cumulative impacts of this project.

#### **Conclusion – Air Quality**

Because the air quality analysis contains a large number of errors, inconsistencies, and unsubstantiated conclusions, the DEIS/R needs to be revised, and a revised draft needs to be recirculated to provide the public and other agencies an opportunity to review and comment on

G437-137

The Project has been modified since issuance of the October 2004 Draft EIS/EIR. See Section 1.4.2 for a summary of Project changes. Section 4.6.1.3 and Impact AIR-5 in Section 4.6.4 contain information on regulated air pollutant emissions and an updated analysis of vessel emissions.

G437-137

G437-138

See the response to the previous Comment G437-137.

G437-139

Section 3.3.9.3 addresses an onshore power source alternative.

G437-138

The Project has been modified since issuance of the October 2004 Draft EIS/EIR. See Section 1.4.2 for a summary of Project changes. The Applicant proposes to use SCR to control NO<sub>x</sub> emissions from the FSRU main generators and from Project support vessels. In order to reduce NO<sub>x</sub> emissions, the Applicant also proposes to have LNG carriers operate on natural gas for all operation in California Coastal Waters. An emission control technology analysis prepared by the Applicant concluded that SCR is not technically feasible for submerged combustion vaporizers in a floating marine environment. The emission control technology analysis was submitted to USEPA Region 9 as part of the Applicant’s Minor New Source Review Construction Permit Application.

G437-140

Section 4.20.3.6 discusses this topic.

G437-139

G437-141

A Revised Draft EIR was issued in March 2006 and recirculated for a 60 day public review period.

G437-140

G437-141

the document. The document as it currently stands is of little use to public agencies that will need to consider permits and mitigation of impacts.

#### 4.7 BIOLOGICAL RESOURCES – MARINE

The Cabrillo Port LNG project will significantly impact the marine environment through: 1) the increased risk of vessel collisions; 2) the introduction of non-native invasive species through ballast water exchange; and 3) acoustical alterations from port construction, operation and vessel traffic that will have significant impacts on marine mammals. The DEIS/R fails to adequately describe the potential for Class I impacts, thus falling short of proposing effective mitigation measures. Additionally, by underestimating the marine ecosystem disturbance in the area, the DEIS/R fails to adequately describe the baseline environment as required by both NEPA and CEQA. Most notably, the proximity of the proposed project to nationally and internationally designated marine protected areas, such as the Channel Islands National Marine Sanctuary and Channel Islands National Park, substantially elevates the risks posed and has not been properly accounted for in the DEIS/R.

##### 4.7.1. Environmental Setting

The Santa Barbara Channel and its environs are nationally recognized as an incredibly diverse and biologically sensitive ecosystem. For this reason, the Channel Islands National Park and National Marine Sanctuary were established in 1980. In fact, one of the main reasons the Sanctuary was established was to protect this region from the threats posed by offshore oil and gas development.

Historically, the waters of the Santa Barbara Channel form one of the most biologically productive ecosystems found on Earth. Unlike most of coastal California, which faces due west and the open ocean, the coastal waters of the Channel are on a south facing coast and caught between two land masses, the South Coast and the Northern Channel Islands. The western section of the Channel is a meeting place of the cool northern California Current and warm Southern California Countercurrent. This type of ecosystem is termed a "transition zone." Transition zones are known to promote large concentrations of both biomass and species diversity as they are the confluence between two or more ecologically distinct systems.

In addition, upwelling provides unusually high concentrations of nutrients, especially macrozooplankton, which are one of the primary driving forces behind the Channel's biological productivity and diversity. Wind patterns around Point Conception and in the Channel create these frequent seasonal upwellings, which through the process of thermal induction, forces deep, nutrient laden ocean waters to rise up the water column into the biologically rich Euphotic Zone (upper sunlight zone of the sea, less than 120 meters deep from the surface). Upwelling effects can reach the point of drawing up ocean waters from as deep as 2000 feet.

Due to these factors, the Santa Barbara Channel and Southern California Bight boast unparalleled species density and diversity, including numerous endangered, threatened and

#### G437-142

Additional information about the topics mentioned and the potential impacts are included in the EIS/EIR. Vessel collision potential and mitigation measures to reduce impacts are included in Section 4.3.4. Section 4.7.2 discusses regulations to prevent the introduction of non-native invasive species. LNG carriers would exchange ballast water outside of the U.S. Exclusive Economic Zone (200 NM) and would only take on ballast water when docked at the FSRU, so non-native invasive species would not be introduced. Impact BioMar-5 in Section 4.7.4 discusses the impacts of noise on the marine environment and mitigation measures to address potential impacts.

#### G437-143

Section 4.7 contains two Class I impacts. Mitigation measures are included to reduce the potential impacts associated with these impacts. However, by definition, Class I impacts are significant adverse impacts that remain significant after mitigation.

Section 4.7.1 describes the baseline data concerning the marine ecosystem in the Project area. The analysis of impacts is based upon this information.

Also see response to Comment G437-50.

#### G437-144

The FSRU would be located outside of the boundary of the Channel Islands National Marine Sanctuary (CINMS), and vessels associated with the operations would not be expected to enter the CINMS. Channel Islands National Park is located 17.71 NM (20.4 miles or 32.8 km) from the proposed location of the FSRU, and the CINMS is 12.71 NM (14.6 miles or 23.6 km) from the FSRU. Sections 4.13.2.2, 4.7.1.4, and 4.20.1.5 contain additional information on this topic. Potential impacts on the marine environment are described in Sections 4.7, 4.18, 4.15 and 4.16. Where feasible, mitigation measures have been developed and included to minimize potential impacts.

G437-142

G437-143

G437-144

December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 46

sensitive marine species such as blue, gray, and humpback whales, southern sea otter (which, for the last few decades, has been attempting to recolonize the coastal waters of the Channel), southern steelhead, marbled murrelet and brown pelican. The blue whale, the largest mammal to ever live on earth, maintains its highest recorded seasonal concentration of individuals in any of the world oceans around the Southern California Bight.

One of the results of this world renowned ecosystem is a high number of state and federally protected marine areas. From Point Arguello to Point Mugu, in both state and federal waters, there are 21 protected areas, ranging in size from less than an acre to thousands of cubic acres. (See Figure 1, below.) There is no other place on the entire west coast of the continental US with such a concentration of marine protected areas.

**FIGURE 1. STATE AND FEDERAL MARINE PROTECTED AREAS**

1. Vandenberg Marine Resources Protected Act Ecological Reserve	8. Anacapa Islands Ecological Reserve	15. Skunk Point Marine Reserve – Santa Rosa Island
2. Channel Islands Biosphere Reserve	9. Santa Barbara Island Ecological Reserve	16. South Point Marine Reserve – Santa Rosa Island
3. Channel Islands National Marine Sanctuary	10. Santa Barbara and Anacapa Island ASBS	17. Gulf Island Marine Reserve – Santa Cruz Island
4. Channel Islands National Park	11. Richardson Rock Marine Reserve – San Miguel Island	18. Scorpion Marine Reserve – Santa Cruz Island
5. Santa Barbara Channel Ecological Preserve	12. Harris Point Marine Reserve – San Miguel	19. Painted Cave Marine Conservation Area – Santa Cruz Island
6. San Miguel Island Ecological Preserve	13. Judith Rock Marine Reserve – San Miguel	20. Anacapa Island Marine Reserve
7. San Miguel, Santa Rosa, and Santa Cruz Island Areas of Special Biological Significance (ASBS)	14. Carrington Point Marine Reserve – Santa Rosa Island	21. Anacapa Island Marine Conservation Area

Unfortunately, in spite of the high levels of marine biological production and protection, the coastal waters of the Santa Barbara Channel and Southern California Bight are in trouble. Years of pollution, over fishing, kelp harvesting, and other human related impacts have left these beautiful marine habitats in a severely degraded condition. Further offshore oil and gas development activities will only exacerbate these threats and impacts.

These waters and resources are especially vulnerable to the introduction of pollutants, due to the presence of the Channel gyre. This gyre creates a somewhat closed system that is created by the Southern California Bight, Northern Channel Islands, and the confluence of the warm and cold ocean currents. The Channel gyre forms when the warm Southern California Countercurrent meets the much stronger, cold California Current, and the warmer current is forced into a counterclockwise rotational pattern that directs its waters south and eastward toward the Northern Channel Islands. Without the Islands, these waters would flow out into the deep ocean.



However, the Islands create a natural barrier which, depending upon season, ocean temperatures, and wind patterns, creates a huge counterclockwise rotating gyre in the entire Channel. Thus, pollutants tend not to escape into the larger Pacific Ocean, but instead disperse throughout the Channel ecosystem.

Given this incredibly unique and sensitive environmental setting, the DEIS/R must be especially thorough in analyzing the potential effects from the proposed project. Additional comments regarding the environmental setting are included in the comments regarding marine biology impacts.

#### **4.7.3 Significance Criteria**

##### **4.7.3.3 Significance Criteria for Impacts to Marine Mammals**

The DEIS/R states that the project impacts would be considered significant if the project causes a Level B take of a listed or candidate species or a Level B take of significant numbers (more than 10) of marine mammals. The DEIS/R fails to address several questions, such as:

- Over what time period are these impacts to be assessed?
- During construction, annually, or over the life of the project?
- And who will monitor and record the number of marine mammal takes?

Similarly, the DEIS/R states that that the project impacts would be considered significant if the project causes substantial deviations of migration routes for significant numbers (more than 10) of marine mammals. Over what time period are these impacts to be assessed: during construction, annually, or over the life of the project?

##### **4.7.3.4 Significance Criteria for Impacts to Seabirds**

This section mentions that project impacts would be considered significant if the project causes injuries or mortalities to substantial numbers (more than 10) of non-listed seabirds, or causes substantial deviations of migration routes to significant numbers (more than 10) of sea birds. Similar information needs to be provided in the DEIS/R to answer over what time period are these impacts to be assessed, such as during construction, annually, or over the life of the project?

#### **4.7.4 Impact Analysis and Mitigation**

##### ***Threats of Increased Vessel Traffic<sup>40</sup>***

The characterization of risks and cumulative impacts to coastal marine ecosystems of the study area described in the DEIS/R is inadequate. In the description of cumulative impacts, the DEIS/R notes, "The Project would increase maritime traffic in the area." (Page 4.20-14.)

<sup>40</sup>/ Excerpted from Exhibit 8, comment letter by Dr. Michael V. McGinnis.

#### **G437-145**

Consultation with State and Federal resource agencies have been ongoing to insure that the impact analysis contained in the EIS/EIR is thorough. Section 4.7.4 contains information reflecting the current status of these consultations.

#### **G437-146**

Section 4.7.3 contains information on this topic.

#### **G437-147**

Section 4.7.3 addresses this topic.

#### **G437-148**

Section 4.7.4 identifies impacts during both operation and construction of the Project. In addition, Table 6.1-1, the Mitigation Monitoring Program, specifies the time frame for each mitigation measure. The projected FSRU in-service life is a maximum of 40 years.

G437-145

G437-146

G437-147

G437-148



December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 48

However, as Page 4.2-27 of DEIS/R notes, the potential frequency of vessel collisions involving a LNG carrier or other large container ships (in addition to commercial and recreational fishing vessels) was not estimated.

Due to the close proximity of the proposed project to nationally and internationally designated marine protected areas (e.g., the northern Channel Islands), the release of bunker or diesel fuel used in vessel transportation during a vessel accident, such as a collision, poses Class I impacts to coastal marine ecosystems of the study area.

For the greater northern Channel Islands marine region, the characterization of the risk in the DEIS/R, given future vessel traffic in and around the project area, is inadequate. The floating storage and regasification unit (FSRU) mooring would be situated near the southbound Coastwise Traffic Lane. [The DEIS/R lacks a substantive analysis on potential cumulative effects on marine ecosystems and marine resource users from potential maritime accidents. Should an incident occur (e.g., LNG tanker collision) there will likely be Class I impacts to coastal marine ecosystems of the northern Southern California Bight, including the Channel Islands National Marine Sanctuary (CINMS) and Channel Islands National Park (CINP).

Without a more thorough and credible use of the best available scientific information in risk and environmental impact assessments, the DEIS/R falls short of the required identification and evaluation of potential direct, indirect, and cumulative impacts on the natural environment that may result from, for example, increased vessel traffic (i.e., vessel collision or maritime accidents) within the project area.

In accordance with CEQA and NEPA, the cumulative impacts analysis should include an analysis of impacts of "reasonably foreseeable future projects". Page 4.3-1 characterizes the number of annual commercial vessel traffic in the area transiting the Coastwise TSS to and from the Port of Los Angeles/Long Beach (approximately 10,000 transits in total). Page 4.3-10 of the DEIS/R estimates the number of LNG carriers as 104 to 156 annually.

In Section 4.20, the DEIS/R fails to consider and evaluate the cumulative impacts of the expansion of the Port of Los Angeles/Long Beach and resulting increased vessel traffic on the operation of the proposed project during its estimated 40-year life. Table 4.20-1 of the DEIS/R does not include detail on the Port of Los Angeles/Long Beach expansion.

Vessel traffic in the project area will likely be greater than the DEIS/R identifies and evaluates in terms of risk and cumulative impacts. As a consequence, the DEIS/R undervalues the level of risk associated with a vessel collision and the impacts that such a collision may have on the coastal marine environment. Moreover, it is unclear whether the Independent Risk Assessment includes the expansion of the Port of Los Angeles/Long Beach in the analysis.

The current plan for the Port of Los Angeles/Long Beach is to increase capacity by 100% by the year 2020 [while the proposed project completion date is 2008]. Port expansion will dramatically increase the number of transits during the proposed project operation. It is crucial

G437-149

G437-150

G437-151

G437-152

G437-153

G437-154

G437-155

G437-156

G437-149

The potential for vessel accidents is discussed in Section 4.3.4. The potential impacts of fuel spill on the marine environment are discussed in Sections 4.8.4 and 4.18.4. Mitigation measures to minimize or prevent a spill are included. The impact of accidental release of fuel on marine biota is considered a Class I impact.

G437-150

The likelihood of a collision is very low. Appendix C1 and Sections 4.2, 4.3, 4.7, and 4.20 contain additional information on this topic.

G437-151

Sections 4.20.1 and 4.20.3 contain additional information this topic.

G437-152

Information about the expansion of the Port of Los Angeles/Long Beach has been added to Table 4.20-1.

G437-153

Section 4.20.3.3 contains additional information on this topic.

G437-154

Section 3.0 of the Independent Risk Assessment (Appendix C1) includes a vessel collision analysis that considers the existing and forecasted increase in vessel traffic.

G437-155

Information about the expansion of the Port of Los Angeles/Long Beach has been added to Table 4.20-1. Also see the response to Comment G437-154.

G437-156

Section 4.20.3.3 contains additional information on this topic.

December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 49

that this factor be considered, evaluated and assessed in terms of potential risk to public health and the marine ecosystems of the northern Southern California Bight.

The Port of Los Angeles/Long Beach is the busiest port of entry on the West Coast, and serves all of the Pacific Rim countries. Since 1990, containerized trade at the Port of Los Angeles/Long Beach has increased by 150% making it the third largest port in the world (behind Hong Kong and Singapore). The Port of Los Angeles/Long Beach is now constructing the largest harbor expansion project ever done in the United States. Today, the 26 miles of wooden wharves in Port of Los Angeles/Long Beach are being replaced with modern cement docks for containerized cargo, petroleum and chemical transshipment, open cargo loading facilities and, in addition, new recreational areas are being created. This information is readily available and should be included in the analysis.

The future capacity at the Port of Los Angeles/Long Beach will lead to larger vessels and container ships that carry more fuel and cargo. Fuel and cargo released during a maritime accident in the study area could significantly impact coastal marine ecosystems. Increased use of the Santa Barbara TSS is likely. Vessel traffic will increase and will occur in close proximity to OCS oil and gas platforms and structures, such as Platform Grace. Vessel traffic will also increase in a marine region that is used by the U.S. Department of Defense military operations, e.g., the SOCAL Range Complex. In the foreseeable future, larger container ships and vessels will carry more heavy bulk fuel (and diesel fuel) during the operation of the proposed project to and from the Port of Los Angeles/Long Beach via the Santa Barbara TSS.

One real threat to coastal marine ecosystems is that large container ships, fast moving LNG carriers, and other large vessels can lose power, as in the current example of the double-hulled Selendang Ayu, a soybean freighter that is spilling heavy bulk and diesel fuel off of Aniakchak Island, Alaska. The risk of losing power within the Coastwise Traffic Lane, near Anacapa Island or Santa Barbara Island, near an OCS platform, should be assessed in the DEIS/R. The impact of vessel collision or accident and the associated "oil spill" or other marine pollution on the marine ecosystems of the area will be significant (i.e., Class I impact).

There are several recent examples of significant ecological impact from vessel accidents:

- The Ecuadorean-registered tanker Jessica ran aground on January 16, 2001 in a bay on San Cristobal Island near the environmentally-sensitive Galapagos Islands, and began leaking oil on January 19, 2001. Over 600,000 liters of fuel seeped out the tanker. Ecuador's government said the damage from the oil spill was "extremely grave." Slicks affected a marine area over 303-square kilometers, and reached Espanola Island, home to large colonies of sea lions, and the island of Santa Fe, famed for the Santa Fe land iguana, a species found nowhere else. Local biologists say the long-term danger is that the fuel will sink to the ocean floor and destroy algae vital to the food chain, threatening marine iguanas, sharks and other species. Slicks have already reached some nearby beaches and harmed sea lions and birds, including blue-footed boobies, pelicans and albatrosses.

December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 50

- In early December 2004, the 738-foot Malaysian-flagged vessel, the Selendang Ayu, lost power and began drifting in the Bering Sea, according to Coast Guard reports (Attachment I). Efforts to tow it and to anchor it failed because lines broke in the stormy weather. The ship was carrying 480,000 gallons of bunker fuel and 21,000 gallons of diesel fuel when it broke apart off an island's rocky coast. It is estimated that 140,000 gallons poured out because the breach in the ship opened one of the fuel tanks, officials said.

In addition, in November, 2004, a 355-foot freighter ran into an unmanned natural gas platform in the Gulf of Mexico and sparked a fire on the platform.

Given the proposed LNG carrier East-West traffic scheme, and the North-South vessel traffic for large container ships using the Port of Los Angeles/Long Beach, the threats posed by a vessel accident to the marine life of the region are under-estimated in the DEIS/R.

Santa Barbara and Anacapa Islands are particular concerns given the importance of these islands for bird reproduction. An "oil spill" and other vessel-related accidents in the project area will likely be difficult to contain. The "ecological core" of the Southern California Bight is the northern Channel Islands, which was designated as a national marine sanctuary in 1980. The CINMS encompasses 1252 square nautical miles of nearshore and offshore waters surrounding the islands of Santa Cruz, Santa Barbara, Anacapa, San Miguel and Santa Rosa. The CINMS includes forests of giant kelp, and is home to numerous populations of fish and invertebrates. At least 27 species of whales and dolphins have been sighted in the CINMS and about 18 species are seen regularly and are considered "residents". The *largest* concentration of blue whales in the world can be found within the area. The CINMS lies on the migratory pathway of the California gray whale and other large baleen and toothed whales. San Miguel Island supports the most numerous and diverse avifauna in the CINMS, with nine species having established colonies.

The project area for the proposed LNG terminal is part of a marine "ecotone" or transition area that combines warmer and colder-water oceanographic provinces. Within the Southern California Bight, the Santa Barbara Channel includes patterns of warm, saline water from the Southern California Countercurrent and the colder water from the California Current. The "mixing" of oceanographic currents produces one of the world's hot spots for coastal marine life; the marine area of the northern Channel Islands should be considered "the Galapagos of the eastern Pacific" due to the region's biodiversity. The prevailing countercurrent is an important factor that may contribute to the risk of a catastrophe of a vessel-related accident. For example, a LNG carrier or containership that loses power could be carried by the countercurrent into one of the northern Channel Islands.

The potential impacts of an "oil spill" or other vessel-related accident and catastrophe on the marine environment should be thoroughly re-evaluated and assessed. A vessel accident could have major long-term impacts on biological communities and ecosystem relationships, and would likely diminish the ecological importance of designated Marine Protected Areas (Allison

G437-157

Section 4.3.1.1 describes existing and Project vessel traffic, including traffic from the Ports of Los Angeles and Long Beach. Section 4.20.1.9 discusses expansion of the ports. Section 4.3.1.3 discusses vessel traffic during Project operation, and the analysis of marine biological impacts in Section 4.7 uses these projections of vessel traffic.

G437-158

Section 4.3.1.4 discusses the provisions that would be taken if a Project-related vessel were to become disabled.

G437-159

Sections 4.7.3 and 4.7.4 contain additional information describing the legal requirements and mitigation measures designed to prevent and further reduce the potential of any oil spills. Section 4.3.1.4 describes the measures to avoid vessel accidents.

G437-157

G437-158

G437-159



December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 51

et al. 2003). Allison et al. (2003) describe the risks associated with catastrophic events in the Santa Barbara Channel in relation to the CINMS's priority management goal of biodiversity protection of the recent designation of MPAs in State waters.

This area is also located along the Pacific Flyway, a major migratory route for birds, and the habitats of the area are a stopover during both north (April-May) and south (September-December) migrations. The habitats of the Southern California Bight (SCB) provide breeding, nesting, and feeding sites for many species and large numbers of seabirds, including many federally and state listed endangered and threatened species. Over 60 species of marine birds may be using sanctuary waters to varying degrees as nesting and feeding habitat, for wintering, and /or as migratory or staging areas. Of the 16 resident species of marine birds in the SCB, eleven breed in the CINMS. Santa Barbara Island has several nationally and internationally significant seabird nesting areas, including the largest nesting Xantus' murrelet colony and the only nesting site in the United States of black storm-petrels. The brown pelican, a listed endangered species, maintains its only permanent rookery in California on Anacapa Island, which is the closest island to the proposed LNG terminal.

#### *Threats to Coastal Marine Ecosystem Health and Integrity*

The DEIS/R incorrectly characterizes the coastal and marine ecology of the study area. For example, the DEIS/R fails to include the Xantus's murrelet as a nesting bird on Anacapa Island. The DEIS/R incorrectly cites a NOAA 2002 document on Marine Protected Areas (Page 4.1-19). The correct reference is CDFG 2002.

Because of the species richness and unique habitats of this marine system, this marine area is designated by the United Nations (UN) as one of the world's biosphere reserves. This information is also not included in the DEIS/R. Anecdotal information that has not been peer reviewed is often cited and referred to in the section on marine mammals. Indeed, a significant amount of peer reviewed scientific literature on the study area is available, yet it is not reviewed in Section 4.7. These types of omissions or failures in the DEIS/R undermine the credibility of the assessment. This is one of the most studied marine ecosystems in the world; the information is readily available and should be included in the analysis.

A major failure of the DEIS/R is that DEIS/R does not describe the general character of the decline in coastal marine ecosystem health of the area in Section 4.7.1. This is surprising given recent focus on the plight of marine ecosystems at the federal level (U.S. Ocean Commission Report) and at the state level (e.g., the Governor's "Protecting Our Ocean: California's Action Strategy"). Section 4.7 provides an inventory of species identified in the study area. However, the uniqueness and fragile nature of the coastal marine ecosystem linkages and relationships are not described in the DEIS/R. Important relationships and linkages that exist in the study area between coastal and marine species and habitats are described in McGinnis (2000).

The CDFG (2002), *Marine Protected Areas in NOAA's Channel Islands National Marine Sanctuary*, Volume I, Chapter 4, provides a much more thorough and credible identification and

G437-160

Section 4.7.1.6 contains revised text and describes seabirds that occur in the Project area.

G437-159

G437-161

The United Nations Educational Scientific and Cultural Organization (UNESCO) lists the Channel Islands as a Biosphere Reserve. The U.S. Public Lands Information Center, which works in partnership with the Bureau of Land Management, the USDA Forest Service, and the U.S. Fish and Wildlife Service to provide interpretive and educational resources to the public, states the following: "Biosphere Reserve" is an international designation for protected, natural environments where conservation is combined with the sustained economic use of natural resources. Each biosphere reserve represents a specific ecosystem and a place where government policy makers, scientists, and local people cooperate to manage land and water resources to meet human needs while conserving natural resources. In the United States, the designation of sites is voluntary...Neither "biosphere preserve" nor "world heritage site" designations place US public lands in any kind of a United Nations land use program. Nor do these designations create United Nations reserves in the United States. America's public lands still belong to the people of the United States.

G437-160

G437-161

G437-162

Much of the anecdotal information was gathered as part of monitoring in the area. This information is consistent with the Channel Islands biogeographic survey. In addition, over 175 sources of scientific literature were used for the analysis of marine biologic impacts. See Section 4.7.6.

G437-162

G437-163

Section 4.7.1 contains additional information on this topic.

G437-163

G437-164

The extensive references included in Section 4.7 provide information comparable to the cited work.

G437-164



December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 52

analysis of the environmental setting and the affected environment. Section 4.2.5.2 of the CDFG Final EIR provides an excellent summary of the existing status of marine ecosystem health. As described in CDFG (2002), scientific evidence indicates that the maintenance of marine ecosystem structure and patterns of native species diversity have dramatically changed in the Southern California Bight. Recent data from extracted cores from the Santa Barbara Channel includes high quality information that can be tracked in increments of close to 50 years. The cores show rapid and extreme shifts in water temperatures during the last 60,000 years. These shifts are known as "regime shifts" that influence the distribution and abundance of marine animals and plants of the Bight. This information is also described in the CINMS "Study Area Report" by McGinnis (2000), the National Park Service, *Gaviota National Seashore Feasibility Study* (2003), and other government documents and technical reports. This material and information is not reviewed in the DEIS/R.

In addition, the impacts to coastal ecosystems from the proposed project and operation should be considered within a framework that includes an understanding of the loss of coastal ecosystems of the south coast. California ranks second in the U.S. in the number of listed threatened and endangered species. A majority of these species depend on coastal wetlands during part of their life cycle. Notable examples of wetland types that largely have been eliminated in southern California include: estuarine wetlands (i.e., salt marshes) as an entire subsystem at 75-90%; "the riparian community" at 90-95% including loss of 40% of the riparian wetlands in San Diego County during the last decade alone; and vernal pools at 90%. This material and information is not reviewed in the DEIS/R.

A general summary of the decline in coastal ecosystem health of the study area is depicted in Table 1 below (McGinnis 2000; CDFG 2002):

*Table 1*  
*Ecosystem Disturbance of the Southern California Bight (SCB)*

- The Euphotic Zone (upper sunlight zone of the sea, less than 120 m thick): There has been a long-term deficit in the supply of food necessary to meet the metabolic demands of the sediment community. Despite this decline in food supply, the food demand of the deep-benthic sea community remained constant.
- Macrozooplankton: Since the late 1970s, macrozooplankton volume in the California Current has declined over 70%, in concert with increasing sea surface temperatures. Reduced macrozooplankton has a major impact at higher trophic levels by changing the nature of the food supply.
- Fishes and Invertebrates: There has been a decrease in harvest for most categories of groundfish, rockfish, California sea urchin landings, landings of swordfish and selected shark species, California halibut, among others. Many of these declines began in late 1970s.
- Oceanic Birds: Ecological theory predicts that in a stable ecosystem those species occupying high trophic levels maintain native species diversity and community structure. Upper trophic level animals such as pelagic birds are indicators of the health of the marine environment. Evidence suggests that the abundance of oceanic birds in the region and the

G437-165

Project impacts on coastal ecosystems would be limited to the pipeline corridor during construction and operation; there are no anticipated impacts on other coastal ecosystems in California. Section 2.1 describes the area potentially affected by pipeline construction and operation. The shore crossing would be installed beneath Ormond Beach. With the proposed mitigation, the potential effects of construction, operations, or an accident would be reduced to a level that is below the significance criteria.

Section 4.8.1.1 contains information on wetlands in the coastal zone. One wetland, an unnamed agricultural drain, was identified within 1,000 feet of the coastline. Section 4.8.4 discusses Project-specific impacts on wetlands. Sections 4.20.2 and 4.20.3 discuss cumulative impacts on regional wetlands.

The proposed Project would not result in loss of wetlands due to MM TerrBio-3a (Avoid, Minimize, or Reduce Impacts on Wetlands) and MM TerrBio-2f (Riparian Avoidance and Restoration). Wetland losses in San Diego County or other areas remote from the Project area would not contribute to cumulative effects of this Project, nor would the proposed Project have any effect on wetlands in San Diego.

G437-166

The proposed Project would not be expected to affect the overall health of the coastal ecosystem. Section 4.1.1 reflects the results of NOAA's recent biogeographic assessment conducted in conjunction with the development of a revised management plan for the Channel Islands National Marine Sanctuary.

G437-164  
cont.

G437-165

G437-166

December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 53

SCB have declined steadily since 1988. Ocean warming and climatic events change pelagic bird abundance within the California current system.

- **Southern California Kelp:** Starting in the late 1970s, kelp forests have suffered great damage, and show a two-thirds reduction in standing biomass since 1957 in southern California kelp forests.
- **Global Climate Change:** There is also some indication that the frequency of these climatic events may be increasing, and will have significant impacts on coastal and marine systems.

This is important ecosystem-based information that is not included in the evaluation of cumulative impacts to the coastal marine ecosystems of the study area. Scientists have also shown the human use of the marine environment (e.g., overfishing and marine pollution) are the primary causes of general ecosystem decline. For example, Dr. Jeremy Jackson et al. (2001) describe the history of the collapse of kelp and other coastal marine ecosystems off southern California. "Overfishing and ecological extinction," according to Jackson et al. (2001), "predate and precondition modern ecological investigations and the collapse of marine ecosystems in recent times, raising the possibility that many more marine ecosystems may be vulnerable to collapse in the near future".

Given the cumulative and current levels of resource over-use in the area, the proposed development should be characterized as a Class I impact to the coastal marine ecosystem and associated biodiversity – a marine ecosystem that is currently showing signs of significant disturbance. Scientists have shown a decline in primary and secondary levels of ecological productivity in the marine area (McGowan et al. 1998). General marine impacts from the proposed development are described in Table 1.4-1. These impacts should be carefully evaluated within the context of a degraded marine ecosystem and in terms of cumulative impacts of the multiple-use of marine resources of the study area.

Given the project area's close proximity to major urban centers and the availability of important marine resources, the nature of multiple-use conflict (OCS oil and gas activity, commercial and recreational fishing, non-consumptive use, Department of Defense operations, among others) has not been carefully identified and evaluated in the DEIS/R, despite the fact that this information is readily available. The DEIS/R should review recent material on the affected environment of the study area by CINMS at <http://channelislands.noaa.gov/manplan/documents.html>. The DEIS/R should include a more detailed characterization of the nature of marine resource use and multiple-use conflict. In addition, the proposed project will exacerbate existing and future multiple-use conflict of the area and should offer mitigation to address associated impacts.

Additional mitigation and specific details on emergency procedures for all phases of the proposed project (construction to operation) should be included in the DEIS/R that address these issues described above.

#### ***The Threat of Marine Invasive Species***

G437-167

The topic is discussed in Section 4.7.1.5 and Section 4.7.4 under Impact BioMar-5.

G437-168

Impacts BioMar-4, -5, and -9 in Section 4.7.4 discuss this topic.

G437-167

G437-168



The DEIS/R describes the proposed Cabrillo Port operations and the existing regulatory setting for ballast water exchange. Ships arriving from outside the Exclusive Economic Zone (EEZ) in the East-West spatial dimension are now asked to conduct ballast water exchange in water greater than 200 nautical miles (370.4 km) from land and greater than 2,000 meters in depth according to International Maritime Organization guidelines.

However, the management approach adopted in the DEIS/R will not prevent or control the introduction of marine invasive species to the study area. Marine invasive species pose a threat to nationally and internationally significant MPAs that are located around the northern Channel Islands (Attachment II). Appropriate mitigation measures should be included in the project to focus on prevention and control of marine invasive species. Preventative rather than reactive policy measures are necessary to control the spread of marine invasive species due to the extremely difficult nature of locating and eradicating these invasives and the uncertainty of their impacts on ecosystems (Ruiz and Carlton 2003 among others).

Commercial shipping is the primary vector for introductions of marine invasive species. The problem of marine invasive species have been identified by scientists and policymakers as a major threat to marine biodiversity and have resulted in hundreds of millions of U.S. dollars in direct costs and losses of ecosystem services during the last century. Invasive species are the second leading cause of biodiversity loss worldwide. Marine invasive species pose potential impacts on human health, marine ecosystem health, and may impact the economic production of resources from marine systems.

The General Accounting Office (2002) and the U.S. Commission on Ocean Policy (2004) note that the primary reason for the problems caused by marine invasive species is incomplete unilateral action for a transboundary pollution problem. An example of unilateral action is California policy that requires mandatory reporting of ballast water exchange or other methods to treat ballast water outside of the EEZ for vessels arriving to the state. [Not all ships, however, discharge ballast water outside of the EEZ. Approximately 50% of the vessels discharging ballast upon arrival to California ports during the first six months of 2000 were from Japan, China and Korea. However, 50% of shipping traffic to California takes place *within* 200 miles of the coastal mainland, primarily from vessel traffic between Mexico and Canada. These vessels are not subject to any guidelines for ballast water or biofouling.] There are also known limitations to ballast water exchange as new introductions have not been abated.

The study area for the proposed project is a particular concern regarding the potential introduction of marine invasive species. Scholars have found that the rapid increase in the rate of invasive species introductions corresponds with the significant increase in shipping traffic along coastal California. Current national and international policies are ineffective in preventing new marine invasions and also in dealing with identified introductions once they have occurred. The U. S. Commission on Ocean Policy (2004) reaffirmed this position by stating, "Invasive species policies are not keeping pace with the problem primarily because of inadequate funding, a lack of coordination among federal agencies, redundant programs, and outdated technologies".

G437-169

Sections 4.7.1.2, 4.7.1.3, 4.7.3.1, and Impact BioMar-3 in Section 4.7.4 discuss this topic.

G437-169

December 20, 2004

Lt. Ken Kusano, Cy Oggins: Cabrillo Port LNG DEIS/R Comments

Page 55

It is widely recognized that the first and foremost line of defense for combating the potentially damaging effects of marine invasive species is to prevent introductions. This position was recently supported by the U. S. Commission on Ocean Policy (2004): "Recognizing the economic and biological harm caused by invasive species, and acknowledging the difficulty of eradicating a species once it is established, aggressive steps should be taken to prevent such introductions". Preventing introductions requires vector management. As pointed out by Ruiz and Carlton (2003), preventing marine invasive species introductions is a recognized priority in policy development and preventive measures are being taken in various ways throughout the United States and the world. Actions focusing on preventing introduction through vector management have the advantage of focusing on the mechanism of introduction and being applicable to multiple species.

With regard to marine invasions, the DEIS/R focuses on ballast water as a vector for introducing marine invasive species. Open ocean exchange is designed to reduce the abundances of coastal organisms, which have the greatest probability of being able to survive in the non-native waters of distant ports, by replacing them with open ocean species. There is considerable evidence, however, that compliance with open ocean exchange of ballast water is not high. To reduce the likelihood of introductions, more attention needs to be given to other vectors, including ship fouling (e.g., hulls, anchor chains, and ship surfaces).

Biofouling of invasive species on boat hulls has not been properly accounted for in the DEIS/R.

Given the nature of the proposed project, it is important that Australia and the U.S. (and California) encourage a comprehensive and coordinated proactive strategy to prevent the spread of marine invasive species. The International Maritime Organization (IMO) has developed a number of recommendations. These recommendations focus on the incentives to individual countries and regional trading blocs to stimulate actual adoption of the international standards. Joint protection (such as programs that support general surveillance and eradication of marine invasives) should be considered in this project, and should be developed as important mitigation measures.

Alternative options to ballast water exchange include techniques that mechanically, physically, chemically or biologically kill or remove the unwanted invasive species. Alternatives include: 1) heat in-transit practices, 2) ultra violet treatment, 3) filtration, 4) ozonation, and 5) deoxygenation. These alternatives to ballast water exchange may overcome the spatial limitations and incomplete effectiveness of exchange in cases involving coastal traffic.

Australia has moved beyond ballast water to address pre-border and post-border control systems for a variety of vectors. Their national plan includes monitoring activities to distinguish between new incursions or the spread of existing marine invasive species, emergency response including interagency coordination, and cost-sharing arrangements. A similar management approach is warranted for the proposed project.

G437-169

G437-170

G437-170.1

G437-171

G437-172

G437-170

Section 4.1.7 describes the underlying assumptions of the document; therefore, compliance with open ocean exchange of ballast water is assumed. California policy requires mandatory reporting of ballast water exchange outside the Exclusive Economic Zone 200 miles from the coast.

G437-170.1

As discussed in Section 4.18.2, the ships that would be used for the proposed Project would be coated with an antifouling material that would comply with the International Convention on the Control of Harmful Anti-fouling Systems on Ships. The impact of biofouling from a maximum of 99 vessels annually calling at the deepwater port, which is located in the open ocean, would be below the level of significance.

G437-171

The IMO recommendations do not apply to ballast water exchange on the open ocean. No ballast water exchange would occur at the deepwater port.

G437-172

The suggested ballast water management plan would require new laws or regulations and, therefore cannot be specified as enforceable or feasible mitigation at this time, a point that has been raised previously by the commenter with respect to the proposed Project.